Amendments to the Drawings

Figure 4A has been revised to delete the capacitor "C" from output to ground as depicted in the original figure.

Replacement sheets for Figures 4A – 4C and 5A – 5C are attached at the end of this paper as an appendix.

REMARKS

Applicant thanks the examiner for the courtesy shown to their attorneys in a telephone interview on August 25, 2005. During the interview, the enablement rejection under 35 U.S.C. § 112 was discussed, but no agreement was reached.

I. Status of Claims

Claims 1-20 stand rejected.

II. Objection to Drawings per MPEP § 608.02(g)

The examiner has objected to Figures. 4A- 4C and 5A-5C in that they should be designated by a legend such as --Prior Art-- because only that which is old is illustrated.

In a response filed May 23, 2005, the applicant did submit revised drawings designating Figures 4A-4C and 5A – 5C as prior art. The drawings are again attached to this paper as an appendix. Withdrawal of the objection to the drawings is respectfully requested.

III. Objections the Specification

Objections Based on 35 U.S.C. 132

The Action objected to the amendments to the specification filed May 23, 2005, under 35 U.S.C. § 132, alleging that the amendment introduces new matter into the disclosure and has further required the applicant to cancel the new matter. The examiner further objected to the addition of an output capacitor in Fig. 4a, as adding new matter.

As stated in the telephone interview with the examiner, the attorneys for the applicant are canceling the subject matter added by the amendments to paragraph [0025] and Fig. 4a, because the subject matter that was added thereby is not necessary to enable one or ordinary skill in the art to understand and practice the invention. Therefore, the subject matter to which the examiner objected is canceled, and the objection under 35 U.S.C. § 132 should now be withdrawn.

The Action states, "Examiner considers himself to be one of ordinary skill in the art. If the function of the invention as originally disclosed was plainly obvious, the enablement

rejection would not have been made." Applicants remind the examiner that "one of ordinary skill" is a legal construct, and does not refer to a particular individual at a particular point in time.

Applicants respectfully submit that the Examiner must consider the enablement question in view of information that was well known in the art as of the filing date, regardless of whether the Examiner was himself actually aware of that information before the initial office action, and regardless of whether the Examiner became aware o f that information when so apprized by Applicant in response to the office action.

M.P.E.P. § 2164.01 recites:

> See also *United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988) ("**The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art** without undue experimentation."). **A patent need not teach, and preferably omits, what is well known in the art.** *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984). [Emphasis added]

In the present case, Applicants provided the examiner with an excerpt from "Principles of Data Conversion System Design," by Behzad Razavi, IEEE press, November, 1995 ("Razavi"), a well-known and readily available book prior to Applicant's filing date. The hypothetical person of ordinary skill in the art would have been familiar with Razavi, even if the examiner was not himself aware of the document before Applicants brought it to the Examiner's attention. Razavi provides important information regarding the level of skill and body of knowledge well known in the art prior to Applicant's filing date. Before the Examiner was aware of Razavi, the Examiner had an incomplete picture of the body of well known information readily available to one of ordinary skill in the art prior to Applicant's filing date. The fact that the Examiner was not aware of this document or the information contained therein does not mean that the document was unavailable or would not have been known by the hypothetical person of ordinary skill in the art that is the basis of the legal standard for enablement. Thus, it is improper for the Action to now state that the enablement rejection must now be sustained, based on the Examiner's earlier impression that the invention would not have been obvious from the specification taken alone,

without reference to that which was well known to those skilled in the art and already available to the public.

Also, M.P.E.P. 2164.05(a) recites:

> **The specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public.** *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984). [Emphasis added]

In view of the foregoing, withdrawal of the objection under § 132 is respectfully requested.

Objections Based on 35 U.S.C. §112.

The Action rejects the claims under § 112, alleging that the specification does not satisfy the written description requirement, and that the claims are enabled by new matter. Applicants respectfully traverse this rejection.

A review of the amendments that were made to the claims shows that no new matter was introduced into the **claims** by amendment. The alleged new matter was added to the specification, and has been canceled. Thus, the written description rejection essentially boils down to a question of whether the claims were enabled by the specification as filed.

As originally filed, the specification states that "FIG. 4A illustrates a typical n-bit D/A converter, which transforms binary inputs into an analog equivalent. . . ." [0028]. Fig. 4A as originally submitted depicts a prior art D/A converter of the charge redistribution type. This figure is identical to the configuration of Fig. 4-23 of Razavi p. 75, excerpts of which were attached to the applicant's May 23 amendment and response. Razavi refers to Fig. 4-23 as "a typical capacitor DAC." Hence that DAC circuit and its operation of converting digital to analog signal levels were well known in the art. Moreover, the output capacitor that applicants had added to Fig. 4a to clarify the DAC's operation is not necessary for that purpose, and was not required to enable one of ordinary skill in the art to practice the claimed invention. Razavi, Fig. 4-23 does not show such a capacitor, and the DAC 306 sees the capacitance of output

capacitor 312 for the full circuit (Fig. 3A). Thus the DAC's operation is enabled without the addition of a capacitor between elements 306 and 310.

The Action alleges that the disclosure "does not enable one of ordinary skill in the art to understand how one or more analog signals of predetermined voltage level are generated or how a dc output based on those analog signals is generated. . . . [T]he circuit shown in Fig. 4A appears to be configured to provide a varying charge output, not a varying voltage output." The circuit depicted in Fig. 4A does indeed show how multiple voltages would be produced, as this is the well known D/A converter also shown in Razavi, publicly available well before applicant's filing date. Referring to a simplified model of Fig. 4-23, Razavi states: "The circuit of Figure 4.16 is, in the strict sense, a voltage divider, rather than a charge divider. In fact, the expression relating its output voltage to VREF and the value of the capacitors is quite similar to that of resistor ladders." p. 64 (emphasis added). Fig. 4B and paragraph [0029] of the specification further explain the operation of Fig. 4A as producing voltages of variable amplitude in response to digital inputs. Thus, the Examiner's contention that the circuit of FIG. 4A does not provide a varying voltage output is disproved by a well known, publicly available reference that was within the state of the art prior to applicant's filing date.

While the issue is now moot (as applicants amended FIG. 4A as required in the Action), the examiner had incorrectly interpreted the indication of the value of the output capacitor, which was "C" with a label for that capacitor. Applicants note that "C," "2C" and "2^{n-1}C" are capacitance values, not reference numerals for components. This may help clarify the operation of Fig. 4a as a digital to analog converter.

The Action further alleges that "the DAC shows only one output whereas the charge pump requires two inputs CLK and CLKB." While the block diagram in Fig. 3A shows only one signal line, the specification states "These two pumping signals are oppositely biased square waves CLK and CLKB." As the examiner has admitted, it would be obvious to one of skill in the art to invert the signal from the DAC (CKK) to create a CLKB.

The Action alleges that "the nature of the signals 316 is unknown" and "the specification provides no explanation as to the nature of module 304's construction or function." One of ordinary skill in the art would have understood from the circuit diagram of Fig. 4A that a binary-

weighted digital input would be used with the D/A converter if the capacitors were binary weighted as shown in Figure 4A and that thermometer-weighted digital signals would be used if the charge redistribution capacitors were all of the same value.

Thermometer-weighted digital signals were well known in the art of digital to analog conversion before the present application was filed, and an explanation of the conversion that would be done in code converter 308 if a binary to thermometer conversion is needed can be found in the Razavi reference (p.76) that has been attached to this response.

The Action alleges that "the nature of the signals output from module 304 is unknown." Because D/A converter 306 is well known in the art, it would be obvious to one of skill in the art that converter 306 requires a clocked, i.e. duty-cycled, binary (or thermometer-weighted) digital signal. One of ordinary skill in the art, familiar with charge redistribution D/A converters would have recognized from Fig. 4a that the inputs to the D/A converter required clocked binary or thermometer weighted digital signals and that module 304 combined the ring oscillator and the digital signals 316 to create clocked digital signals.

Claim 11

The examiner has stated that "No voltage doubler has been disclosed" and suggested that the term be removed from Claim 11. Claim 11 has been amended consistent with the examiner's suggestion.

In view of the remarks and explanations above, the examiner's rejections regarding enablement have been overcome. The applicant requests that the rejections be withdrawn and the claims allowed.

V. Claim Rejections - 35 USC § 102

The examiner has repeated his rejections and comments from the Office Action dated February 23, 2005. Applicant incorporates by reference the responses to the §102 rejections filed in the May 23, 2005 Response.

The Action alleges that "Chow Fig. 5 discloses a "DAC" 31 that functions as recited in claim 1. Within the context of the terminology of the present invention, CLK is seen as a digital input and o1/o2 are seen as analog outputs with amplitude modified by another input vfb." Claim 1 requires that, "said direct current output is configurable by adjusting the inputs of the D/A converter." Vfb (in Chow) is not an input to a D/A converter, it is the output of a differential amplifier 34 that is feeding back the output of charge pumping circuit 32. Thus, Chow does not anticipate claim 1 on this basis alone.

Claim 1 further requires, "a digital to analog (D/A) converter coupled to the oscillator for generating an analog signal of a predetermined voltage level based on the pumping signal as configured by a set of inputs thereof."

Chow neither discloses nor suggests this recitation from claim 1. Contrary to the examiner's assertion, element 31 in Fig. 5 of Chow, the "adaptive swing clock generator" does not function as the D/A converter in claim 1. Chow does not disclose inputs to element 31 that can be adjusted to configure the analog signal output. To the contrary, Chow discloses a "closed loop circuit with negative feedback . . . which ultimately settles into a steady-state condition." Column 4, lines 37-39. Moreover claim 1 recites a "digital to analog converter." Chow does not disclose any digital input to element 31, therefore element 31 cannot be considered a "DAC." The output voltage in Chow is set by "the voltage division ratio of [a] voltage divider," not digital inputs. Column 5, lines 30-32.

For the reasons stated above, the § 102 rejection based on Chow is untenable and must be withdrawn.

VI Claim Rejections - 35 USC § 103

The examiner has repeated his rejections and comments from the Office Action dated February 23, 2005. Applicant incorporates by reference the responses to the examiner's §103 rejections filed in the May 23, 2005 Amendment and Response to Office Action.

The examiner has rejected Claim 2 under 35 USC § 103(a) as being unpatentable over Chow in view of Katsuhisa (USPN 6,762,640). Claim 2 recites "the generator of Claim 1 further comprising a load capacitor coupled to the charge pump." Because Katsuhisa fails to cure the

deficiencies of Chow with respect to the features of claim 1 and 2, i.e. that Chow does not disclose nor suggest a D/A converter, and it would not have been obvious to include a D/A converter in Chow because Chow does not disclose or suggest digital inputs the applicant has overcome the examiner's rejection of claim 2/

The examiner has rejected claims 3, 6, 12, 14, 16, 17 and 20 under 35 U.S.C. 103(a) as being unpatentable over Chow in view of Komiya et al (USPN 6,714,065). Each of these claims either recites or depends from a claim that recites "a digital to analog (D/A) converter coupled to the oscillator for generating an analog signal." Komiya fails to cure the deficiency of Chow described above in that Chow does not disclose a digital to analog converter. Komiya does not disclose or suggest the addition of a D/A converter. Therefore none of claims 3, 6, 12, 14, 17 or 20 would have been obvious based on Chow and Komiya.

The examiner has rejected claims 13 and 18 under 35 USC § 103(a) as being unpatentable over Chow in view of Komiya et al. and Katsuhisa. Because Chow does not disclose a D/A converter, and Komiya and Kaysuhisa fail to cure this deficiency, neither claim 13 nor 18 would have been obvious based on Chow in view of Komiya et al. and Katsuhisa.

For the reasons stated above, the applicant asserts that the examiner's rejection of claims 2, 3, 6, 12-18 and 20 under 35 USC §103(a) has been overcome and requests that the rejection be withdrawn and the claims allowed.

IV. Conclusion

Having addressed the examiner's rejections, applicant submits that the reasons for the examiner's rejections of Claims 1-20 have been overcome. Applicant respectfully requests reconsideration and withdrawal of the rejections and that a Notice of Allowance be issued.

Should any unresolved issues remain, the examiner is requested to call Applicant's attorney at the telephone number below.

The Commissioner for Patents is hereby authorized to charge any fees or credit any excess payment that may be associated with this communication to Duane Morris LLP deposit account 04-1679.

Respectfully submitted,

Date: September 22, 2005

Steven E. Koffs, Registration No. 37,163,
Attorney For Applicant

DUANE, MORRIS LLP
30 South 17th Street
Philadelphia, Pennsylvania 19103-4196
215-979-1250 (Telephone)
215-979-1020 (Fax)